

March 20, 1997

Mr. Andrew S. Fishel, Managing Director  
Federal Communications Commission  
1919 M Street, N.W., Room 852  
Washington, D.C. 20554

RECEIVED  
MAY 13 1997  
Federal Communications Commission  
Office of Secretary

Re: Freedom Of Information Act Request

Dear Mr. Fishel:

Pursuant to Section 0.461 of the Commission's Rules, 47 C.F.R. § 0.461, and the Freedom of Information Act, 5 U.S.C. § 552 *et seq.* ("FOIA"), COMSAT Corporation ("COMSAT") hereby requests disclosure of certain documents held by the Federal Communications Commission. These documents are sought in connection with the Commission's proceedings in MD Docket No. 96-84, Assessment and Collection of Regulatory Fees for Fiscal Year 1996,<sup>1</sup> and MD Docket No. 96-186, Assessment and Collection of Regulatory Fees for Fiscal Year 1997.<sup>2</sup> The request accordingly references statements and terminology used in the 1996 Notice, 1996 Report and Order, and 1997 Notice. COMSAT seeks disclosure of the following items:

- ✓ (1) Records regarding full time equivalent employees ("FTEs") and/or actual employee counts in each of the Commission's Bureaus and each Division within each such Bureau as of September 30, 1995, and as of September 30, 1996.
  - ✓ (2) Records regarding FTEs and/or actual employee counts in each of the Commission's Bureaus and each Division within each such Bureau as of December 31, 1995, and as of December 31, 1996.
- Preserved  
noted  
noted  
noted*

<sup>1</sup> See Notice of Proposed Rulemaking, MD Dkt. No. 96-84, FCC 96-153 (Apr. 9, 1996) ("1996 Notice"); Report and Order, MD Dkt. No. 96-84, FCC 96-295 (July 5, 1996) ("1996 Report and Order").

<sup>2</sup> See Notice of Proposed Rulemaking, MD Dkt. No. 96-186, FCC 97-49 (Mar. 5, 1997) ("1997 Notice").

Mr. Andrew S. Fishel, Managing Director  
March 20, 1997  
Page 2

- ✓ (3) Records regarding FTEs and/or actual employee counts (or portions thereof) in each of the Commission's Bureaus and each Division within each such Bureau engaged in each category of enforcement, policy and rulemaking, international, and user information activities as of September 30, 1995 and as of September 30, 1996. *Budget*  
*No Divisions*
- (4) Records regarding FTEs and/or actual employee counts (or portions thereof) in each of the Commission's Bureaus and each Division within each such Bureau engaged in each category of enforcement, policy and rulemaking, international, and user information activities as of December 31, 1995 and as of December 31, 1996. *Don't have*
- ✓ (5) Records concerning FTEs and/or actual employee counts (or portions thereof) engaged in application processing tasks in each of the Commission's Bureaus and each Division within each such Bureau as of September 30, 1995 and as of September 30, 1996. *Same as #3*
- (6) Records concerning FTEs and/or actual employee counts (or portions thereof) engaged in application processing tasks in each of the Commission's Bureaus and each Division within each such Bureau as of December 31, 1995 and as of December 31, 1996. *Don't have*
- ✓ (7) Records concerning the total number of payee units in each of the following categories associated with the regulatory fee payments for fiscal year 1995: *Also - 5*  
Land Mobile (220-222 MHz, above 470 MHz, Base Station, and SMRS); *Volume*  
Microwave; Interactive Video Data Service; Marine (Ship); Marine (Coast); *Spreadsheet*  
General Mobile Radio Service; Land Mobile (all others); Aviation (Aircraft);  
Aviation (Ground); Amateur Vanity Call Signs; Cellular; Public Mobile Radio;  
Public Mobile One-Way Paging; AM Radio/Class A; AM Radio/Class B; AM  
Radio/Class C; AM Radio/Class D; AM Radio/Construction Permits; FM  
Radio/Classes C, C1, C2, B; FM Radio/Classes A, B1, C3; FM  
Radio/Construction Permits; VHF Commercial/Markets 1-10; VHF  
Commercial/Markets 11-25; VHF Commercial/Markets 26-50; VHF  
Commercial/Markets 51-100; VHF Commercial/Remaining Markets; VHF  
Commercial/Construction Permits; UHF Commercial/Markets 1-10; UHF  
Commercial/Markets 11-25; UHF Commercial/Markets 26-50; UHF  
Commercial/Markets 51-100; UHF Commercial/Remaining Markets; UHF  
Commercial/Construction Permits; Satellite Television Stations (All Markets);  
Construction Permits-Satellite Television Stations; Low Power TV, TV/FM  
Translators and Boosters; Broadcast Auxiliary; Multipoint Distribution  
Service; Cable Antenna Relay Service; Cable Television Systems; Inter-  
Exchange Carrier; Local Exchange Carrier; Competitive Access Provider;

Operator Service Provider/Pay Telephone Operators; Resellers; Other Interstate Providers; Domestic Public Fixed; Earth Stations/VSATs, Equivalent C-Band, and Mobile Earth Stations; Earth Stations/Transmit-Receive and Transmit Only Earth Stations; Space Stations; International Circuits; International Public Fixed; and International (HF) Broadcast.

- ✓ (8) Records setting forth the total amount of fees collected in each of the following categories in connection with the regulatory fee payments for fiscal year 1995: ~~1995~~ *Find  
Regime  
Report*
- Land Mobile (220-222 MHz, above 470 MHz, Base Station, and SMRS); Microwave; Interactive Video Data Service; Marine (Ship); Marine (Coast); General Mobile Radio Service; Land Mobile (all others); Aviation (Aircraft); Aviation (Ground); Amateur Vanity Call Signs; Cellular; Public Mobile Radio; Public Mobile One-Way Paging; AM Radio/Class A; AM Radio/Class B; AM Radio/Class C; AM Radio/Class D; AM Radio/Construction Permits; FM Radio/Classes C, C1, C2, B; FM Radio/Classes A, B1, C3; FM Radio/Construction Permits; VHF Commercial/Markets 1-10; VHF Commercial/Markets 11-25; VHF Commercial/Markets 26-50; VHF Commercial/Markets 51-100; VHF Commercial/Remaining Markets; VHF Commercial/Construction Permits; UHF Commercial/Markets 1-10; UHF Commercial/Markets 11-25; UHF Commercial/Markets 26-50; UHF Commercial/Markets 51-100; UHF Commercial/Remaining Markets; UHF Commercial/Construction Permits; Satellite Television Stations (All Markets); Construction Permits-Satellite Television Stations; Low Power TV, TV/FM Translators and Boosters; Broadcast Auxiliary; Multipoint Distribution Service; Cable Antenna Relay Service; Cable Television Systems; Inter-Exchange Carrier; Local Exchange Carrier; Competitive Access Provider; Operator Service Provider/pay Telephone Operators; Resellers; Other Interstate Providers; Domestic Public Fixed; Earth Stations/VSATs, Equivalent C-Band, and Mobile Earth Stations; Earth Stations/Transmit-Receive and Transmit Only Earth Stations; Space Stations; International Circuits; International Public Fixed; and International (HF) Broadcast.

- ✓ (9) Records concerning the total number of payee units in each of the following categories associated with the regulatory fee payments for fiscal year 1996: ~~1996~~ *Volume  
Chart*
- Land Mobile (220-222 Mhz, above 470 MHz, Base Station, and SMRS); Microwave; Interactive Video Data Service; Marine (Ship); Marine (Coast); General Mobile Radio Service; Land Mobile (all others); Aviation (Aircraft); Aviation (Ground); Amateur Vanity Call Signs; CMRS Mobile Services; CMRS One-Way Paging; Domestic Public Fixed and Multipoint Distribution Services AM Radio/Class A; AM Radio/Class B; AM Radio/Class C; AM Radio/Class D; AM Radio/Construction Permits; FM Radio/Classes C, C1, C2, B; FM Radio/Classes A, B1, C3; FM Radio/Construction Permits; VHF

Mr. Andrew S. Fishel, Managing Director

March 20, 1997

Page 4

Commercial/Markets 1-10; VHF Commercial/Markets 11-25; VHF Commercial/Markets 26-50; VHF Commercial/Markets 51-100; VHF Commercial/Remaining Markets; VHF Commercial/Construction Permits; UHF Commercial/Markets 1-10; UHF Commercial/Markets 11-25; UHF Commercial/Markets 26-50; UHF Commercial/Markets 51-100; UHF Commercial/Remaining Markets; UHF Commercial/Construction Permits; Satellite Television Stations (All Markets); Construction Permits-Satellite Television Stations; Low Power TV, TV/FM Translators and Boosters; Broadcast Auxiliary; Cable Antenna Relay Service; Cable Television Systems; Interstate Telephone Service Providers; Earth Stations; Space Stations; Low Earth Orbit Satellite; INMARSAT/INTELSAT Signatory; International Circuits; International Public Fixed; and International (HF) Broadcast.

- ✓ (10) Records setting forth the total amount of fees collected in each of the following categories in connection with the regulatory fee payments for fiscal year 1996: *Region list*
- Land Mobile (220-222 MHz, above 470 MHz, Base Station, and SMRS); Microwave; Interactive Video Data Service; Marine (Ship); Marine (Coast); General Mobile Radio Service; Land Mobile (all others); Aviation (Aircraft); Aviation (Ground); Amateur Vanity Call Signs; CMRS Mobile Services; CMRS One-Way Paging; Domestic Public Fixed and Multipoint Distribution Services AM Radio/Class A; AM Radio/Class B; AM Radio/Class C; AM Radio/Class D; AM Radio/Construction Permits; FM Radio/Classes C, C1, C2, B; FM Radio/Classes A, B1, C3; FM Radio/Construction Permits; VHF Commercial/Markets 1-10; VHF Commercial/Markets 11-25; VHF Commercial/Markets 26-50; VHF Commercial/Markets 51-100; VHF Commercial/Remaining Markets; VHF Commercial/Construction Permits; UHF Commercial/Markets 1-10; UHF Commercial/Markets 11-25; UHF Commercial/Markets 26-50; UHF Commercial/Markets 51-100; UHF Commercial/Remaining Markets; UHF Commercial/Construction Permits; Satellite Television Stations (All Markets); Construction Permits-Satellite Television Stations; Low Power TV, TV/FM Translators and Boosters; Broadcast Auxiliary; Cable Antenna Relay Service; Cable Television Systems; Interstate Telephone Service Providers; Exchange Carrier; Local Exchange Carrier; Competitive Access Provider; Space Stations; Low Earth Orbit Satellite; INMARSAT/INTELSAT Signatory; International Circuits; International Public Fixed; and International (HF) Broadcast.
- (11) Records concerning the total amounts received by the Commission in each of fiscal year 1995 and fiscal year 1996 in application fees. *Amend Region*
- ✓ (12) Records used by the Commission and records discussing in detail the information reviewed by the Commission with respect to the estimates of

Mr. Andrew S. Fishel, Managing Director

March 20, 1997

Page 5

payment units in each fee category as set forth in Appendix B to the 1996 Notice and Attachment B to the 1997 Notice.

- 6-mails  
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activity
- ✓ (13) Records identifying or discussing the proposals made by Commission Bureaus and offices for additions, deletions or other adjustments to the fees and to the Commission's collection procedures referenced in paragraph 10 of the 1996 Notice.
- ✓ (14) Records identifying or discussing the proposals made by Commission staff concerning other adjustments to the fee schedule and collection procedures referenced in paragraph 11 of the 1997 Notice.
- (15) Records describing the methodology (both theoretical guidance and practical application) underpinning the allocation of direct and indirect costs (as defined in footnote 4 of the 1997 Notice) for enforcement, policy and rulemaking, international, and user information activities for each of the fee categories listed in Attachment D to the 1997 Notice, including records regarding the allocation of costs for employees who work on enforcement, policy and rulemaking, international and/or user information activities *and* on application processing tasks.
- ✓ (16) Records detailing the basis for the Commission's conclusion that, for purposes of the fiscal year 1996 fee program, approximately 14.7 percent of the costs attributable to space station oversight were directly related to Intelsat and Inmarsat Signatory activities.
- ✓ (17) Records describing the methodology (both theoretical guidance and practical application) for determining the actual activity FTEs utilized to make adjustments to reflect the full year costs attributable to each international fee category as described in footnote \*\*\* of Attachment D to the 1997 Notice.
- ✓ (18) Records detailing the components (by work done and personnel performing the work) of the costs that make up the \$1,096,127 Adjusted Pro-Rata Costs for the Intelsat/Inmarsat Signatory fee category set out in Attachment D to the 1997 Notice.
- ✓ (19) Records detailing the components (by work done and personnel performing the work) of the costs that make up the \$5,047,953 Adjusted Pro-Rata Costs for the Space Stations (Geosynchronous) fee category set out in Attachment D to the 1997 Notice.
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- 72-44-1  
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2-1-97
- 72-44-1  
2-1-97

Mr. Andrew S. Fishel, Managing Director

March 20, 1997

Page 6

- ✓ (20) Records detailing the components (by work done and personnel performing the work) of the costs that make up the \$3,922,960 Adjusted Pro-Rata Costs for the International Circuits fee category set out in Attachment D to the 1997 Notice. 1004
- ✓ (21) Records detailing the components (by work done and personnel performing the work) of the costs that make up the \$1,413,427 Adjusted Pro-Rata Costs for the ~~International Circuits~~ fee category set out in Attachment D to the 1997 Notice. 1007  
216  
~~Earth Stations~~

The maximum search fee for this FOIA request is specified as \$3,000.00. If the search fee will exceed this amount, please contact us and additional funds may be authorized. If any questions should arise concerning this request, please contact the undersigned at (301) 214-3459.

Respectfully submitted,

COMSAT CORPORATION

By:

Robert A. Mansbach  
Robert A. Mansbach  
Senior Division Counsel RMH

RAM/KMH:rg

cc: Peter W. Herrick (by Hand Delivery)  
Office of the Secretary (by Hand Delivery)

FEDERAL COMMUNICATIONS COMMISSION  
Washington, D. C. 20554

OFFICE OF  
MANAGING DIRECTOR

April 4, 1997

Mr. Robert A. Mansbach  
Senior Counsel  
Comsat International Communications  
6560 Rock Spring Drive  
Bethesda, MD 20817

Re: 97-93

Dear Mr. Mansbach:

This is in response to your recent Freedom of Information Act (FOIA) request for copies of documents associated with the Commission's Assessment and Collection of Regulatory Fees for Fiscal Years 1995-1997.

All documents relevant to your request are being made available to you, and copies are enclosed. Each page or group of pages are annotated to correspond with the specific number of your request. Note that some materials provided may apply to more than one request. Where no materials are provided in response to a numbered request, it indicates that such materials do not exist.

The Commission is required by the FOIA, 5 U.S.C. Section 552(a)(4)(A), and Commission Rule Section 0.470, 47 C.F.R. Section 0.470, to charge a FOIA requester certain fees, depending on the classification of the requester into one of three categories defined in Commission Rule Section 0.466, 47 C.F.R. Section 0.466. The categories are (1) commercial use requesters; (2) educational and noncommercial scientific institution requesters and requesters who are representatives of the news media; and (3) all other requesters.

Your request appears to be a commercial request. Section 0.466(a)(4) of the Commission's Rules, 47 C.F.R. Section 0.466(a)(4), defines commercial use request as "a request from or on behalf of one who seeks information for a use or purpose that furthers the commercial interests of the requester." Additionally, we note that the Freedom of Information Reform Act of 1986, P.L. 99-570, required the Office of Management and Budget (OMB) to promulgate guidelines applicable to all agencies that are subject to the FOIA. The OMB guidelines state that "commercial use" is defined as a use that "furthers the commercial, trade or profit interests of the requester or person on whose behalf the request is made." It appears that you are a commercial use requestor under the above guidelines and Commission Rule.

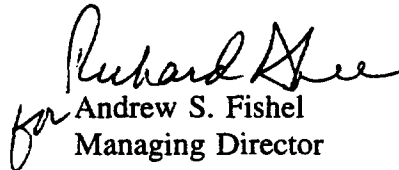
Under the FOIA, 5 U.S.C. Section 552(a)(4), and Commission Rule 0.470(a)(1), 47 C.F.R. Section 0.470(a)(1), we are required to charge fees to recover, in the case of a commercial use requester, the costs of search time, review time, and for the duplication of material. The search time involved refers to Commission staff time expended in searching for the specific records requested, and the review time involved relates to Commission staff time expended in reviewing material found as a result of the search to determine whether any FOIA exemptions are applicable to release of the records.

In this instance the charge for search and review time is \$286.20 (3 hrs total by GM-15 staff and 3.5 hrs total by GM-14 staff). These charges are consistent with current hourly and minimum fees set forth in Section 0.467(a) of the Commission's Rules. The charge for duplication of the documents being furnished to you is \$79.05 (465 pages x \$ .17 per page) as set forth in Section 0.465(c)(2) of the Commission's Rules.

Accordingly, the total charge for processing your FOIA request and furnishing copies of Commission records is \$365.25. The Commission will send an invoice to you for the total amount of the charges applicable to your request. Payment is due within 30 days of receipt of the invoice.

I trust the materials furnished to you are responsive to your request.

Sincerely,

  
for Andrew S. Fishel  
Managing Director

Enclosures

**From:** Andy Fishel  
**To:** FCCMAIL.FCCGROUPS.EVERYONE  
**Date:** 6/28/96 4:04pm  
**Subject:** Timekeeping Requirements

The purpose of this message is to pass on information regarding new timekeeping requirements. As you know, we established a cost accounting system in the FCC this past October 1, 1995. At that time, you were provided with project codes and budget activity codes to use in reporting the number of hours worked by project and activity.

At this time, it is necessary to establish new project codes and activity codes so that we will be able to:

- (1) determine the cost of implementing the Telecommunications Act,
- (2) make modifications to the way employees report their time when working on Spectrum Auctions, and
- (3) establish two new projects.

Effective with payperiod 13 which began on June 23, and ends on July 6, 1996, you should start using the codes provided below, if applicable.

**(1) IMPLEMENTING TELECOMMUNICATIONS ACT:**

In order to track the cost of implementing the Telecommunications Act, we are establishing the following new budget activity codes:

- 11 - Telecommunications Act - Authorization of Service
- 21 - Telecommunications Act - Policy and Rule Making
- 31 - Telecommunications Act - Enforcement
- 41 - Telecommunications Act - Public Information.

If you are working on implementation of the Telecommunications Act, you should keep a record of time worked on this initiative. Project codes remain the same as used in the past. The only change will be to charge the applicable new budget activity. For instance, in the past if your time was charged to budget activity Policy and Rule Making, code 20, and you are reporting time worked on implementation of the Telecommunications Act, you would now report to your timekeeper Activity 21 - Telecommunications Act - Policy and Rule Making.

If you are a supervisor/manager whose time cannot be charged to a specific "N" project, you should continue to charge your time to Executive Direction and Support - S01/70 or Bureau Direction and Support - S02/80.

**(2) SPECTRUM AUCTION**

Additional project codes have been established to cover upcoming auctions through the end of this fiscal year (9-30-96). These project codes follow:

- N51 - Cellular Unserved
- N52 - IVDS RSAs/Defaults
- N53 - 800 Mhz SMR
- N54 - PCS Narrowband
- N55 - PCS D,E & F
- N56 - LMDS 28 Ghx
- N57 - LMS (AVM)
- N58 - DARS
- N59 - 220 MHz

Projects N51 thru N59 can only be used to report time worked on Spectrum Auctions. Therefore, only budget activities 91, 92, 93 and 94 are valid with these projects.

In order to more correctly charge Spectrum Auctions direction and support, we have established a new project code - S51, and budget activity code 51 - Spectrum Auction Direction and Support. This project and budget activity should be used by any FCC employee working on Spectrum Auction. These codes should be used for personnel services, automation, budget/accounting and procurement as well as management time worked. This action is being taken to more correctly record costs and to reduce the amount of hours now charged to project N37, budget activity 91.

**(3) NEW PROJECTS**

The following new projects have been established:

- N38 - Low Earth Orbiting Satellites
- N39 - Signatory to Inmarsat and Instelsat.

Attached you will find an updated list of project and activity codes including those referenced above.

**FCC COST ACCOUNTING ACTIVITY AND PROJECT CODES**  
**FISCAL YEAR/APPROPRIATION (first three digits)**  
601 (Entered by Timekeeper)

**ACTIVITY CODES (fourth and fifth digits):**

10 Authorization of Service  
20 Policy and Rule Making  
30 Enforcement  
40 Public Information Services  
  
11 TeleCom Act - Authorization of Service  
21 TeleCom Act - Policy and Rule Making  
31 TeleCom Act - Enforcement  
41 TeleCom Act - Public Information Services  
  
91 Spectrum Auction - Authorization of Service  
92 Spectrum Auction - Policy & Rule Making  
93 Spectrum Auction - Enforcement  
94 Spectrum Auction - Public Information Services  
  
51 Spectrum Auction Direction & Support  
    (Use only with project code S51)  
70 Executive Direction & Support  
    (Use only with project code S01)  
80 Bureau/Office Direction & Support  
    (Use only with project code S02)

**PROJECT CODES (sixth, seventh and eighth digits):**

**FEE PROJECTS:**

N01 Land Mobile - Exclusive Use  
N02 Microwave  
N03 Interactive Video Data Service (IVDS)  
N04 Aviation (Aircraft)  
N05 Aviation (Ground)  
N06 Marine (Ship)  
N07 Marine (Coast)  
N08 General Mobile Radio Service (GMRS)  
N09 Land Mobile - Shared Use  
N10 Amateur Vanity Call Signs  
N11 Cable Antenna Relay Service (CARS)  
N12 Cable Television Systems  
N13 Domestic Public Fixed Radio  
N14 Cellular Radio  
N15 Public Mobile Radio/CMRS/two-way paging  
N16 Public Mobile Radio(one-way paging)  
N17 International Public Fixed Radio  
N18 Earth Stations  
N19 Space Stations  
N20 IXCS, LECS, and Other Providers  
N21 International Bearer Circuits  
N22 Personal Communication Services (PCS)  
N23 AM Radio  
N24 FM Radio  
N25 VHF Television  
N26 UHF Television  
N27 Broadcast Auxiliary  
N28 LPTV/Translators/Boosters  
N29 International Short Wave  
N30 Multipoint Distribution Service/MMDS  
N31 Amateur Radio  
N32 Direct Broadcast Satellite (DBS)  
N33 Commercial Radio Operators  
N34 Restricted Permits  
N35 Citizens' Band and Radio Control  
N36 Certification/Type Accept.& Approval/Notifications  
N37 Other  
N38 Low Earth Orbiting Satellites  
N39 Signatory to Inmarsat and Instelsat

**Projects - Spectrum Auction Only:**

(The following nine project codes are to be used only with "Activity" codes and/or 94)  
N51 Cellular Unserved  
N52 IVDS RSAs/Defaults  
N53 800 MHz SMR  
N54 PCS Narrowband  
N55 PCS D, E, & F

91, 92, 93,

N56 LMDS 28 GHz  
N57 LMS (AVM)  
N58 DARS  
N59 220 MHz

**PROJECTS - REIMBURSABLE AGREEMENTS:**

P01 Special Travel Initiatives  
P02 Travel Reimbursement Program - Section 1353  
P03 U.S. Department of Commerce  
P04 Bureau of Alcohol, Tobacco and Firearms  
P05 U. S. Customs Service  
P06 Office of Naval Research  
P07 VOA Computer Models  
P08 NTIS/ECAC  
P09 NTIS Tapes - Master Files  
P10 NTIS Tapes - Public Access  
P11 U.S. Coast Guard  
P12 Drug Enforcement Agency  
P13 Radio Marti  
P14 ITU Fellows  
P15 TV Marti  
P16 NTIS - Source Program  
P17 Miscellaneous Reimbursable

**SUPPORT PROJECTS:**

S01 Executive Direction & Support Costs  
(Use only with Activity 70)  
S02 Bureau/Office Direction & Support Costs  
(Use only with Activity 80)  
S51 Spectrum Auction Direction & Support  
(Use only with Activity 51)

6/28/96  
A. Curths

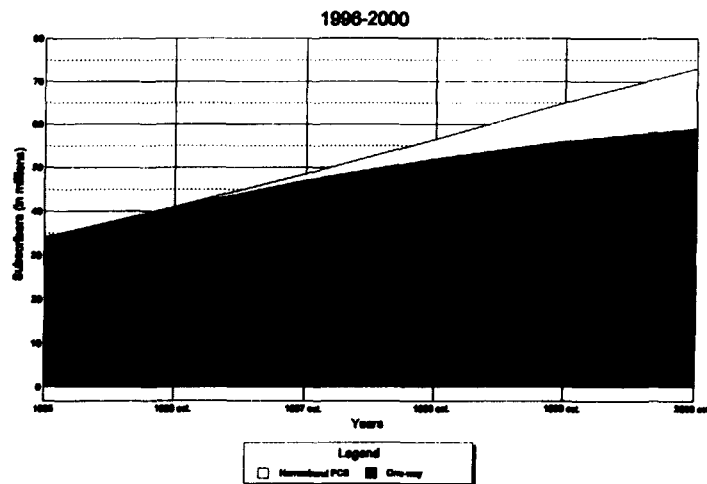
Prepared for PCIA's Wireless Market Portfolio  
by Donaldson, Lufkin & Jenrette

**United States Paging Industry  
DLJ Basic Penetration Model  
1995-2000**

PAGING/ NARROWBAND	1995 (subs. in millions)	1996 est. (subs. in millions)	1997 est. (subs. in millions)	1998 est. (subs. in millions)	1999 est. (subs. in millions)	2000 est. (subs. in millions)
One-way	34.0846	40.85	47.0	52.0	56.0	59.0
Narrowband PCS	.0154	.150	1.5	4.5	9.0	14.0
Total Subs.	34.1	41.0	48.5	56.5	65.0	73.0
Market Penetration	13.0%	15.5%	18.2%	21.0%	24.0%	26.8%

Source: Donaldson, Lufkin & Jenrette

**Paging Subscribers**



In the past several months, the paging industry has continued to exhibit the same trend of previous years: rapid consolidation complemented by strong internal growth. Industry consolidation has taken place at a feverish pace:

The top ten paging companies now constitute almost 70% of the industry compared to 55% only one year ago. As discussed in previous reports, mergers have been driven by the need to raise capital and achieve scale and scope economies in order to meet the anticipated demand for two-way and nationwide services. Until recently, this trend has been facilitated by a surge to all-time high levels in stock prices, which have frequently been used as acquisition currency.

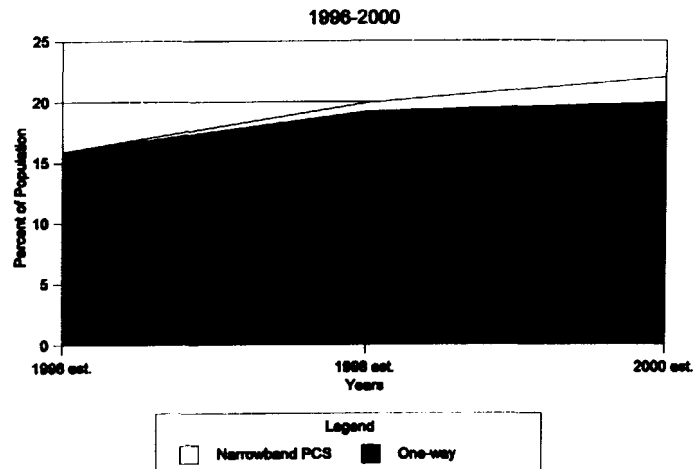
Prepared for PCIA's Wireless Market Portfolio  
by MTA-EMCI

**Paging Subscriber Growth  
1995-2000**

<b>PAGING/ NARROWBAND</b>	<b>1995 (subs. in millions)</b>	<b>1996 est. (subs. in millions)</b>	<b>1996 est. Penetration</b>	<b>1997 est. (subs. in millions)</b>	<b>1998 est. (subs. in millions)</b>	<b>1998 est. Penetration</b>	<b>1999 est. (subs. in millions)</b>	<b>2000 est. (subs. in millions)</b>	<b>2000 est. Penetration</b>
One-way	34.5	42.2	15.9%	48.2	52	19.2%	54	54.8	19.9%
Narrowband PCS	0.01	0.1	0%	0.7	1.9	0.7%	3.2	5.9	2.1%
<b>Total</b>	<b>34.51</b>	<b>42.3</b>	<b>15.9%</b>	<b>48.9</b>	<b>53.9</b>	<b>19.9%</b>	<b>57.2</b>	<b>60.7</b>	<b>22.1%</b>

Source: MTA-EMCI

**Paging Penetration**



In 1995, subscribers increased 21% to 34.5 million users; alphanumeric pagers grew to account for 10% of all pagers; and the industry greatly accelerated its consolidation. MTA-EMCI predicts that over 60 million pagers will be in service by 2000.

In 1995, the paging industry showed a net increase of more than 8 million subscribers. Consumers, as opposed to business users, drove growth in 1995. Among respondents to MTA-EMCI's survey, new subscribers used their pagers 65% of the time for personal reasons, while subscribers of three or more years used their pager only 29.8% of the time for personal reasons.

As a result of lower airtime prices, added system capacity, and increased demand for a higher level of service, the share of alphanumeric pagers in service increased from 7% in 1994 to 10% in 1995. The increasing acceptance of paging within consumer markets and the addition of new feature will contribute to paging's continued success.

## **Methodology for U.S. Forecasts**

MTA-EMCI draws upon the knowledge of 40 industry professionals who are dedicated to the wireless and competitive telecommunications industry. MTA-EMCI brings a holistic approach to forecasting; it combines both quantitative methods and qualitative assessment of inter- and intra-industry developments.

The quantitative analysis that MTA-EMCI uses in its forecasting includes regression and conjoint statistical analysis, large-sample consumer surveys, industry carrier surveys, and other econometric modeling techniques. MTA-EMCI surveys 4,000 households per year regarding their wireless usage and interest. In addition, MTA-EMCI conducts several dozen focus groups per year on wireless products and services. MTA-EMCI regularly conducts executive interviews with key carriers and manufacturers to assess industry trends and opinion. MTA-EMCI also employs its London and Singapore offices to assess worldwide industry activities that can be indicators of future U.S. trends.

MTA-EMCI analyzes the following variables in order to project future industry subscriber growth trends:

- Historical subscriber trends
- Number and strength of same-industry competitors
- Competition from other industries
- Handset and service pricing
- Coverage
- Regulatory environment
- Consumer awareness levels
- Profiles of new users
- Functionality of service
- Expected product developments
- Developments in foreign countries

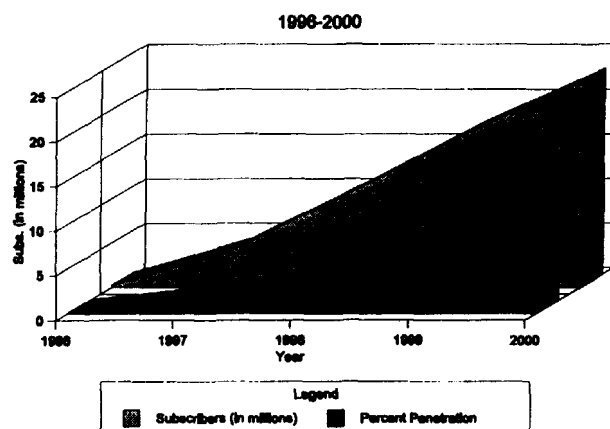
Prepared for PCIA's Wireless Market Portfolio  
by BIA Consulting, Inc.

**Personal Communication Services (PCS) Demand Forecast  
1996-2000**

PCS	1996 est.	1997 est.	1998 est.	1999 est.	2000 est.
Total U.S. Population	262,213,300	264,573,220	266,954,379	269,356,968	271,781,181
Year-End Wireless Penetration	16.62%	21.92%	26.74%	30.60%	33.29%
Year-End Wireless Subscribers	43,579,850	58,004,922	71,386,198	82,416,479	90,469,143
Annual Subscriber Growth	38.50%	31.91%	21.97%	14.42%	8.79%
Share of New Wireless Additions to PCS	2.0%	25.94%	48.62%	60.87%	72.98%
Year-End PCS Subscribers	248,516	3,990,162	10,496,008	17,209,813	23,086,634
Average Lines per Subscriber	1.0	1.02	1.08	1.21	1.35
Year-End PCS Subscriber Lines	248,516	4,066,637	11,383,333	20,841,784	31,251,277
Year-End PCS Adjusted Penetration	0.09%	1.54%	4.26%	7.74%	11.50%

Source: BIA Consulting Inc.

**PCS Subscribers and Penetration**



BIA projects that the High Tier/Mobility category will lead PCS' penetration for the next five years and, therefore, will constitute the majority of PCS subscribers. Over time, however, Residential Local Loop and Commercial Local Loop will gain momentum. In fact, it is expected that in the later years of a 10 year forecast, High Tier/Mobility penetration may actually decrease as subscribers migrate to the local loop services. The logic is that if home- or office-based telephony is widely available and can offer mobility as well, an increasing number of people will opt for this rather than having a dedicated location-based phone and a dedicated mobile phone. As defined herein, PCS includes three primary service categories: High Tier/Mobility, Residential Local Loop with Mobility, and Commercial Local Loop with Mobility.

## **Methodology**

BIA's PCS penetration forecast is based on an analysis of three service categories. High Tier/Mobility refers to a service comparable to conventional cellular. Residential Local Loop refers to home-based telephony with a mobile component. This means that a portion of the subscriber's minutes of use are outside his or her home, ie., there is a High Tier/Mobility component within Residential Local Loop. Commercial Local Loop refers to business-based telephony with a mobile component. It is further assumed that the average number of lines per subscriber--per household or per business--will increase over time.

BIA considered numerous variables in developing its penetration forecast, including economic and demographic trends, the progression of other telecommunications technologies and services, the progression of comparable technologies and services in other countries, and various likely competitive scenarios and their implications on pricing and intensity of marketing.

It is important to note that BIA's forecast is for the nation as a whole. Penetration by market will vary greatly, depending on economic and demographic trends, the timing of entry of service providers, pricing, and the intensity of competition.

Although we are confident in our methodology and in our thinking, we recognize that the nature of any forecast is such that no assurances can be given that the marketplace will evolve as we have projected. Many variables will affect PCS' penetration, from macroeconomic factors to technological factors to the actions of specific companies in the PCS industry and in related industries.

Prepared for PCIA's Wireless Market Portfolio  
by Donaldson, Lufkin and Jenrette

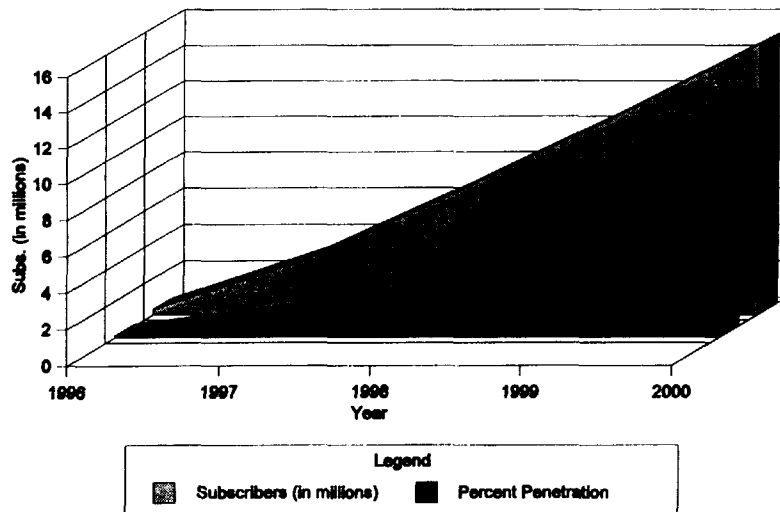
**DLJ (PCS) Basic Penetration Model  
1996-2000**

PCS	1996 est.	1997 est.	1998 est.	1999 est.	2000 est.
Subscribers (in millions)	.3	3.0	6.75	10.75	15.025
Penetration	0.011%	1.12%	2.51%	3.97%	5.51%

Source: Donaldson, Lufkin and Jenrette

## PCS Subscribers and Penetration

1996-2000



This table updates our industry forecasts. In general we are raising our estimates both of total subscribers and of the PCS portion of the business. We also now see the PCS business coming on somewhat faster than we did before. Additions for 1996 are thus figured at nearly 10 million now instead of 9 million. By sector, we estimate there will be 300,000 PCS subscribers instead of 225,000 and that cellular will add the same 9.7 million subscribers as last year. Penetration would total 16.5%, about a 3.7 percentage point increase, the highest ever in a single year.

Prepared for PCIA's Wireless Market Portfolio  
by Insight Research Corporation

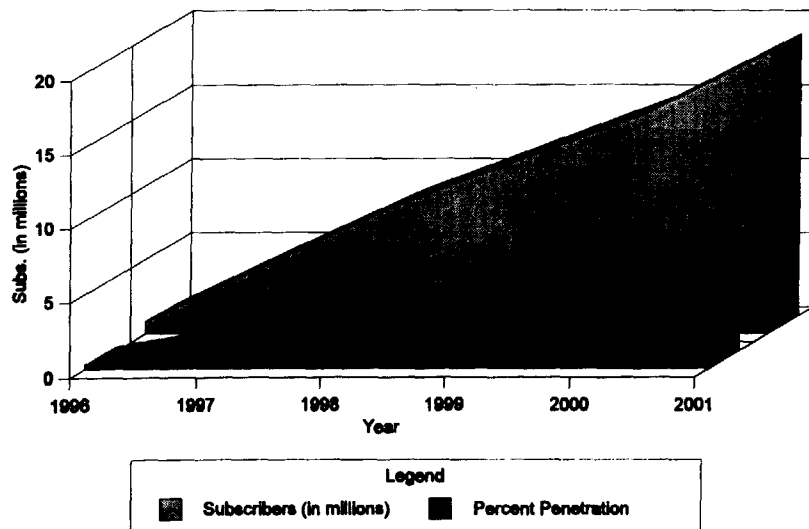
**Personal Communication Services (PCS) Demand Forecast  
1996-2001**

PCS	1996 est.	1997 est.	1998 est.	1999 est.	2000 est.	2001 est.	CAGR%
PCS Subscribers (in millions)	0.8	4.7	8.5	11.7	14.8	19.0	88.40%
Penetration	0.3%	1.7%	3.1%	4.2%	5.2%	6.6%	86.00%

Source: The Insight Research Corporation

**PCS Subscribers and Penetration**

1996-2001



Notes: Numbers of subscribers are as of the end of each year and equal the starting number of subscribers for the next year. Growth rates for PCS, are calculated from 1997, which is the first full year of PCS in the US.

1. Competition between PCS carriers and existing cellular carriers will be intense after 1997 as the PCS vendors strive to gain sufficient market shares to cover their high fixed costs and break even, while the established cellular carriers fight to maintain their market shares. FCC auctions have left most of the PCS frequency winners deeply in debt, while the need to quickly implement a network and gain customers creates a major drain on cash.

2. As the penetration of wireless services approaches 25% by 2001, the decline in wireless charges will lead some wireline customers to choose PCS as their primary carrier. INSIGHT expects up to 10% of US households, over 9 million households to be candidates for switching from wireline to wireless service for their primary phone. This competition may be promoted by AT&T and other long distance carriers seeking to capture part of the local telephone market.

## **Methodology**

### **The Reality of PCS Networking:**

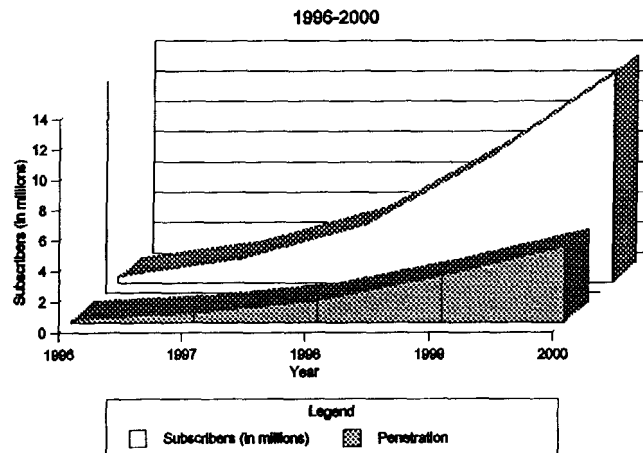
#### **The Competitive Threat to Cellular Telephony**

This report examines the competition already heating up between narrow- and broadband PCS and between PCS and cellular. Following the FCC's auction and PCS frequency awards, the winners find themselves scrambling hard to recoup their investment and find a niche. The number of mobile workers, counting both those employed by corporations, independent contractors, and entrepreneurs, is expected to jump from just over 50 million last year to about 57 million by 2000. As pressures in business increases, these mobile workers will be looking to boost their productivity with competitive forms of wireless voice and data communications. The report will analyze the market justification for some, but not all, of the proposed PCS service plans. It will examine the commercial and consumer markets for the proposed services, profile competing device and infrastructure vendors, and forecast the winners and explain why their strategies will work.

Prepared for PCIA's Wireless Market Portfolio  
by Paul Kagan Associates, Inc.  
**5-Year PCS Telecom Projections**

<b>5-Year PCS Telecom Projections</b>	<b>1996</b>	<b>Year 1 1997</b>	<b>Year2 1998</b>	<b>Year 3 1999</b>	<b>Year 4 2000</b>	<b>Year 5 2001</b>	<b>CAGR '96-2001</b>
PCS mobile pen. (total)	0.13%	0.54%	1.34%	2.95%	4.85%	6.48%	
Subs EOY: PCS mobile (thousands)	349	1,465	3,698	8,234	13,664	18,442	121%
Sub growth rate: PCS	1340.3%	319.9%	152.4%	122.7%	66.0%	35.0%	
% total broadband subs: PCS	1%	3%	6%	11%	15%	19%	
Net new subs: PCS (thousands)	325	1,116	2,232	4,536	5,430	4,778	71%
% increm. broadband sub. gains:PCS	3%	10%	20%	40%	50%	52%	
PCS mobile service rev. \$(millions)	106	448	1,315	2,956	5,296	7,464	134%
PCS mobile serv. rev/sub	\$49.44	\$44.85	\$42.45	\$41.30	\$40.31	\$38.75	-5%
PCS roaming rev. \$(millions)	0	5	26	89	214	378	347%
PCS mobile wrls. rev. \$(millions)*	109	508	1,407	3,253	5,937	8,522	139%
PCS rev./subs.	\$50.47	\$46.64	\$45.42	\$45.44	\$45.19	\$44.24	-3%
Mobile rev. mkt. share: PCS	0%	2%	4%	8%	13%	17%	

### PCS Subscribers and Penetration



note: Broadband subscribers include cellular and PCS, but exclude home cell fixed wireless revenue

\* Includes revenue from wireless data. See separate table.

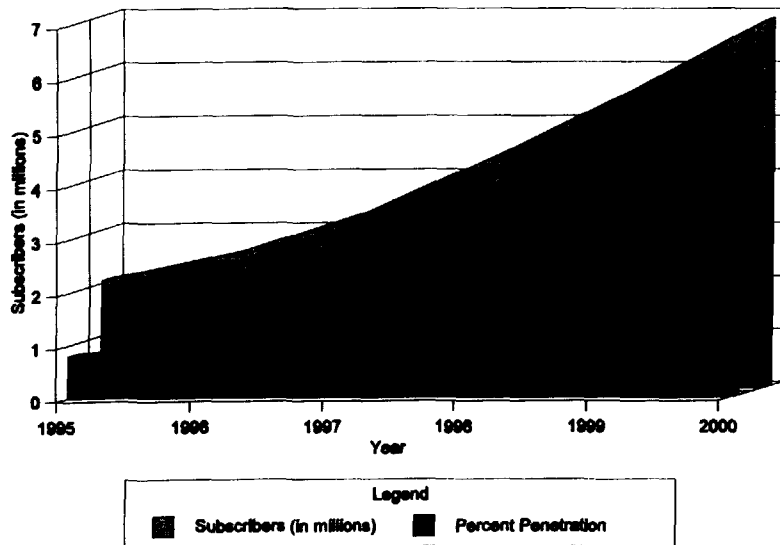
Prepared for PCIA's Wireless Market Portfolio  
by MTA-EMCI

**Specialized Mobile Radio (SMR) Subscriber Growth  
1995-2000**

SMR	1995	1996 est.	1997 est.	1998 est.	1999 est.	2000 est.
Subscribers (in millions)	2.05	2.55	3.32	4.4	5.6	6.9
Penetration	0.8%	1.00%	1.20%	1.60%	2.10%	2.50%

Source: MTA-EMCI

**SMR Subscribers and Penetration**



The SMR industry surpassed 2 million units in service in 1995, amid a host of regulatory and technological changes. The increase of 230,000 new units represents a healthy 13% gain over 1994. Delays in allocating new licenses in all SMR bands is impeding growth in several markets.

## **Methodology for U.S. Forecasts**

MTA-EMCI draws upon the knowledge of 40 industry professionals who are dedicated to the wireless and competitive telecommunications industry. MTA-EMCI brings a holistic approach to forecasting; it combines both quantitative methods and qualitative assessment of inter- and intra-industry developments.

The quantitative analysis that MTA-EMCI uses in its forecasting includes regression and conjoint statistical analysis, large-sample consumer surveys, industry carrier surveys, and other econometric modeling techniques. MTA-EMCI surveys 4,000 households per year regarding their wireless usage and interest. In addition, MTA-EMCI conducts several dozen focus groups per year on wireless products and services. MTA-EMCI regularly conducts executive interviews with key carriers and manufacturers to assess industry trends and opinion. MTA-EMCI also employs its London and Singapore offices to assess worldwide industry activities that can be indicators of future U.S. trends.

MTA-EMCI analyzes the following variables in order to project future industry subscriber growth trends:

- Historical subscriber trends
- Number and strength of same-industry competitors
- Competition from other industries
- Handset and service pricing
- Coverage
- Regulatory environment
- Consumer awareness levels
- Profiles of new users
- Functionality of service
- Expected product developments
- Developments in foreign countries

Prepared for PCIA's Wireless Market Portfolio  
by Herschel Shosteck Associates

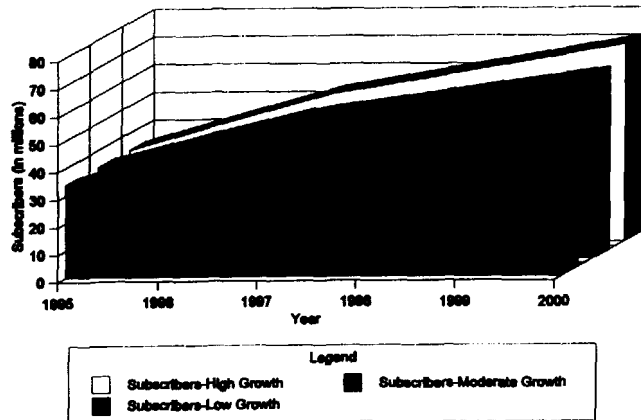
**Cellular Subscriber Extended Forecasts  
1995-2000**

Cellular	1995	1996 est.	1997 est.	1998 est.	1999 est.	2000 est.
Subscribers-Low Growth	33.78	41.8	49.4	53.4	57.4	61.4
Subscribers-Moderate Growth	33.78	42.8	51.4	56.4	61.4	66.4
Subscribers-High Growth	33.78	43.8	53.4	59.4	65.4	71.4

Source: Herschel Shosteck Associates

**Extended Subscriber Forecast**

1995-2000



For each of the years 1996 and 1997, we foresee approximately 8.0 to 10.0 million net additional subscribers, roughly the same as the 9.7 million net additions of 1995. The 9.7 million gains of 1995 were driven by carriers reducing terminal prices to zero. With phones at "giveaway" prices, any further fiscal stimulus to cellular growth must come from tariff reductions. Thus, the gains of 1996 and 1997 will be driven by carriers reducing cellular tariffs.

Competition from PCS will stimulate cellular tariff declines of 10 percent or more during each of these two years. By year-end 1997, this process will run its course. With no further fiscal stimulus, annual subscriber gains will contract to the 4 to 6 million range in 1998 and after.

### **The Shosteck Forecasting Methodology**

Figure 4.1 of Cellular Market Forecasts traces the growth of total U.S. cellular subscribers (800 MHz) since inception of service in 1983 through year-end, 1995. The data from 1983 through 1985 are estimates by Herschel Shosteck Associates, Ltd. based on quarterly surveys of the industry. The data since 1986 are estimates of CTIA, based on their raw responses to account for non-response.

Figure 4.10 forecasts total cellular subscribers (800 MHz) from 1996 through 2005. This figure is unadjusted for the effect of PCS (1.9 GHz) competition.